CUMMINS INC. Charleston, SC 29405 Marine Performance Curves	Basic Engine Model: **KTA50-D(M1)**	Curve Number: **D(M)-6386**		
	Engine Configuration: **D283036MX02**	CPL Code: **8063**	Date: **14-Jun-12**	

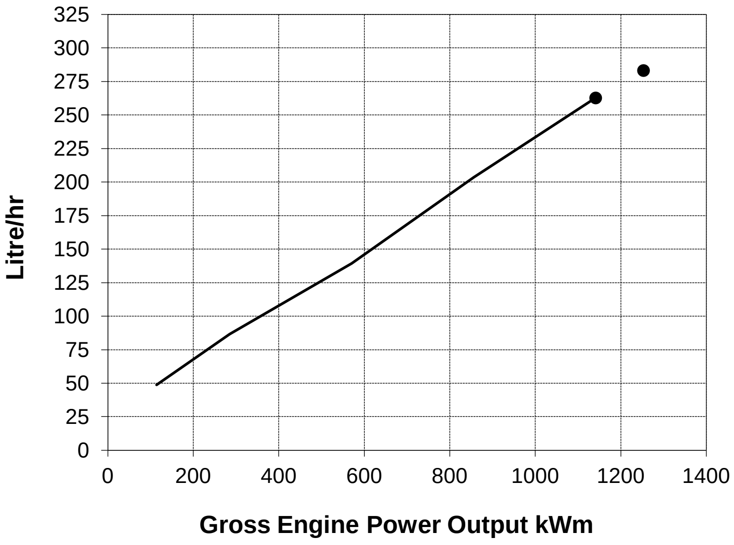
Displacement:	**50 liter**	**[3067 in^3]**		kW [hp] @ rpm
Bore:	**159 mm**	**[6.25 in]**	Advertised Power:	**1141 [1530] @ 1800**
Stroke:	**159 mm**	**[6.25 in]**	Aspiration:	**Turbocharged/Aftercooled**
Fuel System:	**Direct Injection Cummins STC**		Exhaust Type:	**Dry**
Cylinders:	**16**			

CERTIFIED: This marine diesel engine complies with or is certified to the:
IMO - NOx requirements of the International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13

Engine Speed	**Overload Capacity**		**Prime Power**		**Continuous Power**	
RPM	kWm	BHP	kWm	BHP	kWm	BHP
1800	1253	1680	1141	1530		N.A.

Engine Performance Data @ 1800 RPM

OUTPUT POWER			**FUEL CONSUMPTION**			
%	**kWm**	**BHP**	**Kg/ kW-h**	**Lb/ BHP–h**	**Liter/ hour**	**U.S. Gal/ hour**
10% OVERLOAD CAPACITY						
110%	1253	1680	0.192	0.316	283.1	74.8
PRIME POWER						
100%	1141	1530	0.196	0.322	262.7	69.4
75%	856	1148	0.202	0.333	203.7	53.8
50%	571	765	0.207	0.342	139.3	36.8
25%	285	383	0.258	0.425	86.7	22.9
10%	114	153	0.363	0.597	48.7	12.9
CONTINUOUS POWER						
80%						N.A.



Rating Conditions: Ratings are in accordance with ISO 15550 and ISO 8528-5 reference conditions; air pressure at 100 kPa (29.61 in Hg), air temperature 25°C (77°F), and 30% relative humidity. The fuel consumption data is based on No. 2 diesel fuel weight at 0.85 kg/liter (7.001 lb/U.S. gal).

Power output curves are based on the engine operating with fuel system, water pump, and lubricating oil pump; not included are battery charging alternator, fan, optional equipment, and driven components.

Values from engine control modules and displayed on instrument panels are not absolute. Tolerance varies, but is generally less than +/-5% when operating within 30% of rated power.

Unless otherwise specified, tolerance on all values is +/-5%.

Prime Power Rating is applicable for supplying continual electrical power at varied load. The following are the Prime Rating parameters:
* Prime Power is available for an unlimited number of hours per year in a variable load application. Variable load should not exceed a 70% average of the Prime Power rating during any operating period of 250 hours.
* The total operating time at 100% Prime Power shall not exceed 500 hours per year.
* There is a 10% overload capability for a period of 1 hour within a 12 hour period of operation. Total operating time at 10% overload shall not exceed 25 hours per year.

TECHNICAL DATA DEPT. **CHIEF ENGINEER**

Auxiliary Marine Engine Performance Data

Curve No.	**D(M)-6386**
DS :	**DS-4998**
CPL :	**8063**
DATE:	**14-Jun-12**

General Engine Data

Engine Model		KTA50-D(M1)			
Rating Type		Prime Power		Overload	
Rated Engine Power	kW [hp]	1141	[1530]	1253	[1680]
Governed Engine Speed	rpm		1800		
Rated HP Production Tolerance	±%		5		
Rated Engine Torque	N·m [lb·ft]	6053	[4464]	6646	[4902]
Low Idle Speed Range Minimum	rpm		725		
Maximum	rpm		775		
Maximum Torque Capacity from Front of Crank²	N·m [lb·ft]	4341	[3202]		
Brake Mean Effective Pressure	kPa [psi]	1513	[219]	1662	[241]
Compression Ratio			13.9:1		
Piston Speed	m/sec [ft/min]	9.5	[1875]		
Firing Order		1R-1L-3R-3L-2R-2L-5R-4L-8R-8L-6R-6L-7R-7L-4R-5L			
Friction Power	kW [hp]	168	[225]		
Steady State Stability Band at Constant Load	%		[0.25]		
Weight Dry - Engine Only	kg [lb]	4853	[10700]		
Weight Dry - Engine With Heat Exchanger	kg [lb]	5173	[11405]		

Noise and Vibration

Average Noise Level - Top	(Idle)	dBA @ 1m	N.A.
	(Rated)	dBA @ 1m	N.A.
Average Noise Level - Right Side	(Idle)	dBA @ 1m	N.A.
	(Rated)	dBA @ 1m	N.A.
Average Noise Level - Left Side	(Idle)	dBA @ 1m	N.A.
	(Rated)	dBA @ 1m	N.A.

Fuel System¹

Approximate Fuel Flow to Pump	l/hr [gal/hr]	564.0	[149.0]	564.0	[149.0]
Maximum Allowable Fuel Supply to Pump Temperature	°C [°F]	60	[140]	60	[140]
Approximate Fuel Flow Return to Tank	l/hr [gal/hr]	301.3	[79.6]	280.9	[74.2]
Approximate Fuel Return to Tank Temperature	°C [°F]	71	[160]	71	[160]
Maximum Heat Rejection to Drain Fuel	kW [Btu/min]		[N.A.]		[N.A.]
Fuel Rail Pressure	kPa [psi]	807	[117]	896	[130]
Average Fuel Consumption- Emissions ISO 8178 D2 Test Cycle	l/hr [gal/hr]	138.6	[36.6]		

Air System¹

Intake Manifold Pressure	kPa [in Hg]	190	[56]	203	[60]
Intake Air Flow	l/sec [cfm]	1744	[3695]	1803	[3821]
Heat Rejection to Ambient	kW [Btu/min]	74	[4233]	76	[4341]

Exhaust System¹

Exhaust Gas Flow	l/sec [cfm]	3924	[8315]	4059	[8600]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	430	[806]	444	[830]
Exhaust Gas Temperature (Manifold)	°C [°F]	556	[1032]	575	[1067]
Heat Rejection to Exhaust	kW [Btu/min]	865	[49215]	943	[53670]

TBD= To Be Determined **N/A = Not Applicable** **N.A. = Not Available**

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[1] **Unless otherwise specified, all data is at rated power conditions and can vary ± 5%.**

[2] **No rear loads can be applied when the FPTO is fully loaded. Max PTO torque is contingent on torsional analysis results for the specific drive system. Consult Installation Direction Booklet for Limitations.**

[3] **Heat rejection to coolant values are based on 50% water/50% ethylene glycol mix and do NOT include fouling factors. If sourcing your own cooler, a service fouling factor should be applied according to the cooler manufacturer's recommendation.**

[4] **Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.**

CUMMINS ENGINE COMPANY, INC

COLUMBUS, INDIANA

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Auxiliary Marine Engine Performance Data

Curve No.	**D(M)-6386**
DS :	**DS-4998**
CPL :	**8063**
DATE:	**14-Jun-12**

Emissions (in accordance with ISO 8178 Cycle D2)

NOx (Oxides of Nitrogen)	g/kw·hr [g/bhp·hr]	8.39	[6.260]
HC (Hydrocarbons)	g/kw·hr [g/bhp·hr]	0.40	[0.300]
CO (Carbon Monoxide)	g/kw·hr [g/bhp·hr]	0.64	[0.480]
PM (Particulate Matter)	g/kw·hr [g/bhp·hr]		[N.A.]

Emissions (in accordance with ISO 8178 Cycle E2)

NOx (Oxides of Nitrogen)	g/kw·hr [g/bhp·hr]	7.96	[5.935]
HC (Hydrocarbons)	g/kw·hr [g/bhp·hr]	0.33	[0.245]
CO (Carbon Monoxide)	g/kw·hr [g/bhp·hr]	0.52	[0.390]
PM (Particulate Matter)	g/kw·hr [g/bhp·hr]		[N.A.]

Cooling System[1]

Sea Water Pump Specifications	MAB 0.08.17-07/16/2001		
Pressure Cap Rating (With Heat Exchanger Option)	kPa [psi]	103	[15]

One Pump Two Loop Low Temperature Aftercooling (LTA)

Main Engine Circuit

Coolant Flow to Main Cooler (with open thermostat)		l/min [gal/min]	1117	[295]		
Standard Thermostat Operating Range	Start to open	°C [°F]	80	[175]		
	Full open	°C [°F]	91	[195]		
Heat Rejection to Engine Coolant[3]		kW [Btu/min]	440	[25067]	472	[26850]

Aftercooler (LTA) Circuit

Coolant Flow to LTA Cooler (with open thermostat)		l/min [gal/min]	288	[76]		
LTA Thermostat Operating Range	Start to open	°C [°F]	74	[165]		
	Full open	°C [°F]	86	[187]		
Heat Rejection to Engine Coolant[3]		kW [Btu/min]	189	[10730]	218	[12415]
Maximum Coolant Inlet Temperature from LTA Cooler For Keel Cooled		°C [°F]	71	[160]		

TBD= To Be Determined **N/A = Not Applicable** **N.A. = Not Available**

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[4] Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.

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